

# THJ Series



## High Temperature Tantalum Chip Capacitor



### FEATURES

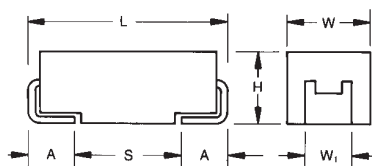
- Improved reliability – 2x standard
- 175°C @ 0.5V<sub>R</sub> continuous operation
- CV range: 0.10-220μF / 6.3-50V
- 5 case sizes available
- Low ESR options on approval
- High temperature automotive and industry applications



SnPb termination option is not RoHS compliant.

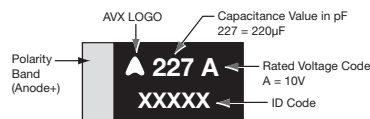
### APPLICATIONS

- Automotive ECU and ABS control electronics
- Geothermal instrumentation



### MARKING

#### A, B, C, D, E CASE



### CASE DIMENSIONS: millimeters (inches)

| Code | EIA Code | EIA Metric | L±0.20 (0.008) | W±0.20 (0.008) -0.10 (0.004) | H±0.20 (0.008) -0.10 (0.004) | W <sub>1</sub> ±0.20 (0.008) | A±0.30 (0.012) -0.20 (0.008) | S Min.       |
|------|----------|------------|----------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|
| A    | 1206     | 3216-18    | 3.20 (0.126)   | 1.60 (0.063)                 | 1.60 (0.063)                 | 1.20 (0.047)                 | 0.80 (0.031)                 | 1.10 (0.043) |
| B    | 1210     | 3528-21    | 3.50 (0.138)   | 2.80 (0.110)                 | 1.90 (0.075)                 | 2.20 (0.087)                 | 0.80 (0.031)                 | 1.40 (0.055) |
| C    | 2312     | 6032-28    | 6.00 (0.236)   | 3.20 (0.126)                 | 2.60 (0.102)                 | 2.20 (0.087)                 | 1.30 (0.051)                 | 2.90 (0.114) |
| D    | 2917     | 7343-31    | 7.30 (0.287)   | 4.30 (0.169)                 | 2.90 (0.114)                 | 2.40 (0.094)                 | 1.30 (0.051)                 | 4.40 (0.173) |
| E    | 2917     | 7343-43    | 7.30 (0.287)   | 4.30 (0.169)                 | 4.10 (0.162)                 | 2.40 (0.094)                 | 1.30 (0.051)                 | 4.40 (0.173) |

W<sub>1</sub> dimension applies to the termination width for A dimensional area only.

### HOW TO ORDER

| THJ  | B                            | 105                                                                                                                                      | *                             | 035                                                                                                          | R                                                                                                                                                                                                                                           | JN                                                    | —                                                                                                        |
|------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Type | Case Size<br>See table above | Capacitance Code<br>pF code: 1st two digits represent significant figures<br>3rd digit represents multiplier (number of zeros to follow) | Tolerance<br>K=±10%<br>M=±20% | Rated DC Voltage<br>006=6.3Vdc<br>010=10Vdc<br>016=16Vdc<br>020=20Vdc<br>025=25Vdc<br>035=35Vdc<br>050=50Vdc | Packaging<br>R = Pure Tin 7" Reel<br>S = Pure Tin 13" Reel<br>A = Gold Plating 7" Reel<br>B = Gold Plating 13" Reel<br>H = Tin Lead 7" Reel<br>(Contact Manufacturer)<br>K = Tin Lead 13" Reel<br>(Contact Manufacturer)<br>H, K = Non RoHS | Standard Suffix<br>OR<br><b>0100</b><br>Low ESR in mΩ | Additional characters may be added for special requirements<br>V = Dry pack Option (selected codes only) |

### TECHNICAL SPECIFICATIONS

|                                    |                                                                                                                                     |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Technical Data:                    | All technical data relate to an ambient temperature of +25°C                                                                        |
| Capacitance Range:                 | 0.10 μF to 220 μF                                                                                                                   |
| Capacitance Tolerance:             | ±10%; ±20%                                                                                                                          |
| Rated Voltage (V <sub>R</sub> )    | ≤ +85°C: 6.3 10 16 20 25 35 50                                                                                                      |
| Category Voltage (V <sub>C</sub> ) | ≤ +125°C: 4 7 10 13 17 23 33                                                                                                        |
| Category Voltage (V <sub>C</sub> ) | ≤ +175°C: 3 5 8 10 12 17 25                                                                                                         |
| Surge Voltage (V <sub>S</sub> )    | ≤ +85°C: 8 13 20 26 32 46 65                                                                                                        |
| Surge Voltage (V <sub>S</sub> )    | ≤ +125°C: 5 8 13 16 20 28 40                                                                                                        |
| Surge Voltage (V <sub>S</sub> )    | ≤ +175°C: 4 6 10 12 15 21 30                                                                                                        |
| Temperature Range:                 | -55°C to 175°C voltage derating.                                                                                                    |
| Reliability:                       | 0.5% per 1000 hours at 85°C, V <sub>R</sub> with 0.1Ω/V series impedance, 60% confidence level, 3.5 Fits at 40°C, 0.5V <sub>R</sub> |
| Termination Finish:                | Sn Plating (standard), Gold Plating available on request                                                                            |
|                                    | Meets requirements of AEC-Q200                                                                                                      |



## High Temperature Tantalum Chip Capacitor

### CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

| Capacitance          |                   | Rated voltage ( $V_R$ ) to 85°C (Voltage Code) |               |                     |         |                 |                     |             |
|----------------------|-------------------|------------------------------------------------|---------------|---------------------|---------|-----------------|---------------------|-------------|
| $\mu F$              | Code              | 6.3V (J)                                       | 10V (A)       | 16V (C)             | 20V (D) | 25V (E)         | 35V (V)             | 50V (T)     |
| 0.10<br>0.15<br>0.22 | 104<br>154<br>224 |                                                |               |                     |         |                 | A<br>A<br>A         |             |
| 0.33<br>0.47<br>0.68 | 334<br>474<br>684 |                                                |               |                     |         | A<br>A          | A<br>B<br>B         |             |
| 1.0<br>1.5<br>2.2    | 105<br>155<br>225 |                                                |               | A                   | A       | A<br>B, B(1500) | A/B<br>C<br>C       |             |
| 3.3<br>4.7<br>6.8    | 335<br>475<br>685 | A<br>A<br>A                                    | A<br>A<br>A   | A<br>A/B<br>A/B     | B       | C               | C<br>C<br>D         | D<br>D<br>D |
| 10<br>15<br>22       | 106<br>156<br>226 | A<br>B<br>B                                    | A/B<br>B<br>B | B<br>B<br>C, C(500) | C       | C<br>D          | D<br>D<br>D, D(300) | D/E         |
| 33<br>47<br>68       | 336<br>476<br>686 | B<br>C<br>C                                    | C<br>C<br>D   | C<br>C/D<br>D       | D       | D               | E                   |             |
| 100<br>150<br>220    | 107<br>157<br>227 | D<br>D                                         | D<br>E        | E                   |         |                 |                     |             |

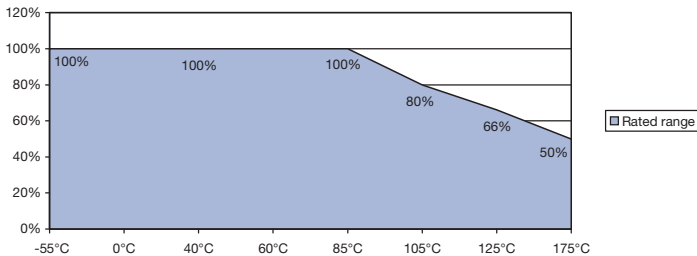
Available Ratings, (ESR ratings in mOhms in brackets)

Engineering samples - please contact manufacturer

\*Codes under development - subject to change

Note: Voltage ratings are minimum values. AVX reserves the right to supply higher ratings in the same case size, to the same reliability standards.

THJ 175°C Voltage vs Temperature Rating



### RATINGS & PART NUMBER REFERENCE

| AVX<br>Part No.  | Case<br>Size | Capacitance<br>(μF) | Rated<br>Voltage<br>(V) | Rated<br>Temperature<br>(°C) | Category<br>Voltage<br>(V) | Category<br>Temperature<br>(°C) | DCL<br>(μA)<br>Max. | DF<br>%<br>Max. | ESR<br>Max. (Ω)<br>@ 100kHz | MSL             | 100kHz RMS Current (mA) |      |       |       |  |
|------------------|--------------|---------------------|-------------------------|------------------------------|----------------------------|---------------------------------|---------------------|-----------------|-----------------------------|-----------------|-------------------------|------|-------|-------|--|
|                  |              |                     |                         |                              |                            |                                 |                     |                 |                             |                 | 25°C                    | 85°C | 125°C | 175°C |  |
| 6.3 Volt @ 85°C  |              |                     |                         |                              |                            |                                 |                     |                 |                             |                 |                         |      |       |       |  |
| THJA475*006#JN   | A            | 4.7                 | 6.3                     | 85                           | 3                          | 175                             | 0.5                 | 6               | 6                           | 1               | 112                     | 101  | 45    | 22    |  |
| THJA685*006#JN   | A            | 6.8                 | 6.3                     | 85                           | 3                          | 175                             | 0.5                 | 4.5             | 2.6                         | 1               | 170                     | 153  | 68    | 34    |  |
| THJA106*006#JN   | A            | 10                  | 6.3                     | 85                           | 3                          | 175                             | 0.6                 | 4.5             | 2.2                         | 1               | 185                     | 166  | 74    | 37    |  |
| THJB156*006#JN   | B            | 15                  | 6.3                     | 85                           | 3                          | 175                             | 0.9                 | 6               | 2.5                         | 1               | 184                     | 166  | 74    | 37    |  |
| THJB226*006#JN   | B            | 22                  | 6.3                     | 85                           | 3                          | 175                             | 1.4                 | 6               | 2.5                         | 1               | 184                     | 166  | 74    | 37    |  |
| THJB336*006#JN   | B            | 33                  | 6.3                     | 85                           | 3                          | 175                             | 1.9                 | 6               | 2.2                         | 1               | 197                     | 177  | 79    | 39    |  |
| THJC476*006#JN   | C            | 47                  | 6.3                     | 85                           | 3                          | 175                             | 3.0                 | 6               | 1.6                         | 1               | 262                     | 236  | 105   | 52    |  |
| THJC686*006#JN   | C            | 68                  | 6.3                     | 85                           | 3                          | 175                             | 4.3                 | 6               | 1.5                         | 1               | 271                     | 244  | 108   | 54    |  |
| THJD107*006#JN   | D            | 100                 | 6.3                     | 85                           | 3                          | 175                             | 6                   | 4.5             | 0.4                         | 1               | 612                     | 551  | 245   | 122   |  |
| THJD157*006#JN   | D            | 150                 | 6.3                     | 85                           | 3                          | 175                             | 9.5                 | 6               | 0.9                         | 1               | 408                     | 367  | 163   | 82    |  |
| 10 Volt @ 85°C   |              |                     |                         |                              |                            |                                 |                     |                 |                             |                 |                         |      |       |       |  |
| THJA335*010#JN   | A            | 3.3                 | 10                      | 85                           | 5                          | 175                             | 0.5                 | 6               | 5.5                         | 1               | 117                     | 105  | 47    | 23    |  |
| THJA475*010#JN   | A            | 4.7                 | 10                      | 85                           | 5                          | 175                             | 0.5                 | 4.5             | 2.9                         | 1               | 161                     | 145  | 64    | 32    |  |
| THJA685*010#JN   | A            | 6.8                 | 10                      | 85                           | 5                          | 175                             | 0.7                 | 4.5             | 2.6                         | 1               | 170                     | 153  | 68    | 34    |  |
| THJA106*010#JN   | A            | 10                  | 10                      | 85                           | 5                          | 175                             | 1                   | 6               | 2.7                         | 1               | 167                     | 150  | 67    | 33    |  |
| THJB106*010#JN   | B            | 10                  | 10                      | 85                           | 5                          | 175                             | 1                   | 4.5             | 1.8                         | 1               | 217                     | 196  | 87    | 43    |  |
| THJB156*010#JN   | B            | 15                  | 10                      | 85                           | 5                          | 175                             | 1.5                 | 4.5             | 1.5                         | 1               | 238                     | 214  | 95    | 48    |  |
| THJB226*010#JN   | B            | 22                  | 10                      | 85                           | 5                          | 175                             | 2.2                 | 6               | 2.4                         | 1               | 188                     | 169  | 75    | 38    |  |
| THJC336*010#JN   | C            | 33                  | 10                      | 85                           | 5                          | 175                             | 3.3                 | 6               | 1.6                         | 1               | 262                     | 236  | 105   | 52    |  |
| THJC476*010#JN   | C            | 47                  | 10                      | 85                           | 5                          | 175                             | 4.7                 | 4.5             | 0.5                         | 1               | 469                     | 422  | 188   | 94    |  |
| THJD686*010#JN   | D            | 68                  | 10                      | 85                           | 5                          | 175                             | 6.8                 | 4.5             | 0.4                         | 1               | 612                     | 551  | 245   | 122   |  |
| THJD107*010#JN   | D            | 100                 | 10                      | 85                           | 5                          | 175                             | 10                  | 6               | 0.9                         | 1               | 408                     | 367  | 163   | 82    |  |
| THJE227*010#JN   | E            | 220                 | 10                      | 85                           | 5                          | 175                             | 22                  | 10              | 0.5                         | 1 <sup>1)</sup> | 574                     | 517  | 230   | 115   |  |
| 16 Volt @ 85°C   |              |                     |                         |                              |                            |                                 |                     |                 |                             |                 |                         |      |       |       |  |
| THJA225*016#JN   | A            | 2.2                 | 16                      | 85                           | 8                          | 175                             | 0.5                 | 6               | 6.5                         | 1               | 107                     | 97   | 43    | 21    |  |
| THJA335*016#JN   | A            | 3.3                 | 16                      | 85                           | 8                          | 175                             | 0.5                 | 6               | 5                           | 1               | 122                     | 110  | 49    | 24    |  |
| THJA475*016#JN   | A            | 4.7                 | 16                      | 85                           | 8                          | 175                             | 0.8                 | 4.5             | 2.9                         | 1               | 161                     | 145  | 64    | 32    |  |
| THJB475*016#JN   | B            | 4.7                 | 16                      | 85                           | 8                          | 175                             | 0.8                 | 6               | 3.5                         | 1               | 156                     | 140  | 62    | 31    |  |
| THJA685*016#JN   | A            | 6.8                 | 16                      | 85                           | 8                          | 175                             | 1.1                 | 6               | 3.5                         | 1               | 146                     | 132  | 59    | 29    |  |
| THJB685*016#JN   | B            | 6.8                 | 16                      | 85                           | 8                          | 175                             | 1.1                 | 6               | 2.5                         | 1               | 184                     | 166  | 74    | 37    |  |
| THJB106*016#JN   | B            | 10                  | 16                      | 85                           | 8                          | 175                             | 1.6                 | 6               | 2.8                         | 1               | 174                     | 157  | 70    | 35    |  |
| THJB156*016#JN   | B            | 15                  | 16                      | 85                           | 8                          | 175                             | 2.4                 | 6               | 2                           | 1               | 206                     | 186  | 82    | 41    |  |
| THJC226*016#JN   | C            | 22                  | 16                      | 85                           | 8                          | 175                             | 3.5                 | 6               | 1.6                         | 1               | 262                     | 236  | 105   | 52    |  |
| THJC226*016#0500 | C            | 22                  | 16                      | 85                           | 8                          | 175                             | 3.5                 | 4.5             | 0.5                         | 1               | 469                     | 422  | 188   | 94    |  |
| THJC336*016#JN   | C            | 33                  | 16                      | 85                           | 8                          | 175                             | 5.3                 | 6               | 1.5                         | 1               | 271                     | 244  | 108   | 54    |  |
| THJC476*016#JN   | C            | 47                  | 16                      | 85                           | 8                          | 175                             | 7.5                 | 6               | 0.9                         | 1               | 371                     | 334  | 148   | 74    |  |
| THJD476*016#JN   | D            | 47                  | 16                      | 85                           | 8                          | 175                             | 7.5                 | 6               | 0.9                         | 1               | 408                     | 367  | 163   | 82    |  |
| THJD686*016#JN   | D            | 68                  | 16                      | 85                           | 8                          | 175                             | 10.9                | 4.5             | 0.9                         | 1               | 408                     | 367  | 163   | 82    |  |
| THJE107*016#JN   | E            | 100                 | 16                      | 85                           | 8                          | 175                             | 16                  | 8               | 0.4                         | 1 <sup>1)</sup> | 642                     | 578  | 257   | 128   |  |
| 20 Volt @ 85°C   |              |                     |                         |                              |                            |                                 |                     |                 |                             |                 |                         |      |       |       |  |
| THJA155*020#JN   | A            | 1.5                 | 20                      | 85                           | 10                         | 175                             | 0.5                 | 6               | 6.5                         | 1               | 107                     | 97   | 43    | 21    |  |
| THJB335*020#JN   | B            | 3.3                 | 20                      | 85                           | 10                         | 175                             | 0.7                 | 6               | 3                           | 1               | 168                     | 151  | 67    | 34    |  |
| THJC156*020#JN   | C            | 15                  | 20                      | 85                           | 10                         | 175                             | 3.0                 | 6               | 1.7                         | 1               | 254                     | 229  | 102   | 51    |  |
| THJD336*020#JN   | D            | 33                  | 20                      | 85                           | 10                         | 175                             | 6.6                 | 6               | 0.9                         | 1               | 408                     | 367  | 163   | 82    |  |
| 25 Volt @ 85°C   |              |                     |                         |                              |                            |                                 |                     |                 |                             |                 |                         |      |       |       |  |
| THJA474*025#JN   | A            | 0.47                | 25                      | 85                           | 12                         | 175                             | 0.5                 | 4               | 14                          | 1               | 73                      | 66   | 29    | 15    |  |
| THJA684*025#JN   | A            | 0.68                | 25                      | 85                           | 12                         | 175                             | 0.5                 | 4               | 10                          | 1               | 87                      | 78   | 35    | 17    |  |
| THJA105*025#JN   | A            | 1.0                 | 25                      | 85                           | 12                         | 175                             | 0.5                 | 3               | 5.2                         | 1               | 120                     | 108  | 48    | 24    |  |
| THJB225*025#JN   | B            | 2.2                 | 25                      | 85                           | 12                         | 175                             | 0.6                 | 6               | 4.5                         | 1               | 137                     | 124  | 55    | 27    |  |
| THJB225*025#1500 | B            | 2.2                 | 25                      | 85                           | 12                         | 175                             | 0.6                 | 6               | 1.5                         | 1               | 238                     | 214  | 95    | 48    |  |
| THJC685*025#JN   | C            | 6.8                 | 25                      | 85                           | 12                         | 175                             | 1.7                 | 6               | 2                           | 1               | 235                     | 211  | 94    | 47    |  |
| THJC106*025#JN   | C            | 10                  | 25                      | 85                           | 12                         | 175                             | 2.5                 | 6               | 1.8                         | 1               | 247                     | 222  | 99    | 49    |  |
| THJD226*025#JN   | D            | 22                  | 25                      | 85                           | 12                         | 175                             | 5.5                 | 6               | 0.9                         | 1               | 408                     | 367  | 163   | 82    |  |
| THJD336*025#JN   | D            | 33                  | 25                      | 85                           | 12                         | 175                             | 8.3                 | 6               | 0.9                         | 1               | 408                     | 367  | 163   | 82    |  |
| 35 Volt @ 85°C   |              |                     |                         |                              |                            |                                 |                     |                 |                             |                 |                         |      |       |       |  |
| THJA104*035#JN   | A            | 0.1                 | 35                      | 85                           | 17                         | 175                             | 0.5                 | 4               | 24                          | 1               | 56                      | 50   | 22    | 11    |  |
| THJA154*035#JN   | A            | 0.15                | 35                      | 85                           | 17                         | 175                             | 0.5                 | 4               | 21                          | 1               | 60                      | 54   | 24    | 12    |  |
| THJA224*035#JN   | A            | 0.22                | 35                      | 85                           | 17                         | 175                             | 0.5                 | 4               | 18                          | 1               | 65                      | 58   | 26    | 13    |  |
| THJA334*035#JN   | A            | 0.33                | 35                      | 85                           | 17                         | 175                             | 0.5                 | 4               | 15                          | 1               | 71                      | 64   | 28    | 14    |  |
| THJB474*035#JN   | B            | 0.47                | 35                      | 85                           | 17                         | 175                             | 0.5                 | 4               | 10                          | 1               | 92                      | 83   | 37    | 18    |  |
| THJB684*035#JN   | B            | 0.68                | 35                      | 85                           | 17                         | 175                             | 0.5                 | 4               | 8                           | 1               | 103                     | 93   | 41    | 21    |  |
| THJA105*035#JN   | A            | 1.0                 | 35                      | 85                           | 17                         | 175                             | 0.5                 | 4               | 7.5                         | 1               | 100                     | 90   | 40    | 20    |  |
| THJB105*035#JN   | B            | 1.0                 | 35                      | 85                           | 17                         | 175                             | 0.5                 | 4               | 6.5                         | 1               | 114                     | 103  | 46    | 23    |  |
| THJC155*035#JN   | C            | 1.5                 | 35                      | 85                           | 17                         | 175                             | 0.5                 | 6               | 4.5                         | 1               | 156                     | 141  | 63    | 31    |  |
| THJC225*035#JN   | C            | 2.2                 | 35                      | 85                           | 17                         | 175                             | 0.8                 | 6               | 3.5                         | 1               | 177                     | 160  | 71    | 35    |  |
| THJC335*035#JN   | C            | 3.3                 | 35                      | 85                           | 17                         | 175                             | 1.2                 | 6               | 2.5                         | 1               | 210                     | 189  | 84    | 42    |  |
| THJC475*035#JN   | C            | 4.7                 | 35                      | 85                           | 17                         | 175                             | 1.6                 | 6               | 2.2                         | 1               | 224                     | 201  | 89    | 45    |  |
| THJD685*035#JN   | D            | 6.8                 | 35                      | 85                           | 17                         | 175                             | 2.4                 | 6               | 1.3                         | 1               | 340                     | 306  | 136   | 68    |  |
| THJD106*035#JN   | D            | 10                  | 35                      | 85                           | 17                         | 175                             | 3.5                 | 6               | 1                           | 1               | 387                     | 349  | 155   | 77    |  |
| THJD156*035#JN   | D            | 15                  | 35                      | 85                           | 17                         | 175                             | 5.3                 | 6               | 0.9                         | 1               | 408                     | 367  | 163   | 82    |  |

### RATINGS & PART NUMBER REFERENCE

| AVX Part No.          | Case Size | Capacitance (μF) | Rated Voltage (V) | Rated Temperature (°C) | Category Voltage (V) | Category Temperature (°C) | DCL (μA) Max. | DF % Max. | ESR Max. (Ω) @ 100kHz | MSL             | 100kHz RMS Current (mA) |      |       |       |
|-----------------------|-----------|------------------|-------------------|------------------------|----------------------|---------------------------|---------------|-----------|-----------------------|-----------------|-------------------------|------|-------|-------|
|                       |           |                  |                   |                        |                      |                           |               |           |                       |                 | 25°C                    | 85°C | 125°C | 175°C |
| THJD226*035#JN        | D         | 22               | 35                | 85                     | 17                   | 175                       | 7.7           | 6         | 0.6                   | 1               | 500                     | 450  | 200   | 100   |
| THJD226*035#0300      | D         | 22               | 35                | 85                     | 17                   | 175                       | 7.7           | 6         | 0.3                   | 1               | 707                     | 636  | 283   | 141   |
| THJE336*035#JN        | E         | 33               | 35                | 85                     | 17                   | 175                       | 11.6          | 6         | 0.5                   | 1 <sup>1)</sup> | 574                     | 517  | 230   | 115   |
| <b>50 Volt @ 85°C</b> |           |                  |                   |                        |                      |                           |               |           |                       |                 |                         |      |       |       |
| THJD335*050#JN        | D         | 3.3              | 50                | 85                     | 25                   | 175                       | 1.7           | 6         | 1.1                   | 1               | 369                     | 332  | 148   | 74    |
| THJD475*050#JN        | D         | 4.7              | 50                | 85                     | 25                   | 175                       | 2.4           | 6         | 0.9                   | 1               | 463                     | 417  | 185   | 93    |
| THJD685*050#JN        | D         | 6.8              | 50                | 85                     | 25                   | 175                       | 3.4           | 6         | 0.7                   | 1               | 408                     | 367  | 163   | 82    |
| THJD106*050#JN        | D         | 10               | 50                | 85                     | 25                   | 175                       | 5             | 6         | 0.7                   | 1               | 463                     | 417  | 185   | 93    |
| THJE106*050#JN        | E         | 10               | 50                | 85                     | 25                   | 175                       | 5             | 6         | 0.7                   | 1 <sup>1)</sup> | 486                     | 437  | 194   | 97    |

1<sup>1)</sup> Dry pack option (see How to order) recommended for reduction of stress during soldering. Dry pack parts should be treated as MSL 3.

Moisture Sensitivity Level (MSL) is defined according to J-STD-020

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage after 5 minutes.

The EIA & CECC standards for low ESR Solid Tantalum Capacitors allow an ESR movement to 1.25 times catalogue limit post mounting.

For typical weight and composition see page 202.

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**

### QUALIFICATION TABLE

| TEST                         | THJ series (Temperature range -55°C to +175°C)                                                                                                                                                                                                                                                 |               |               |                    |                              |           |            |            |            |            |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|--------------------|------------------------------|-----------|------------|------------|------------|------------|
|                              | Condition                                                                                                                                                                                                                                                                                      |               |               | Characteristics    |                              |           |            |            |            |            |
| <b>Endurance</b>             | Determine after application of rated voltage for 2000 +48/-0 hours at 85±2°C and then leaving 1-2 hours at room temperature. Also determine of 175°C temperature, category voltage for 2000 +48/-0 hours and then leaving 1-2 hours at room temperature. Power supply impedance to be ≤0.1Ω/V. |               |               | Visual examination | no visible damage            |           |            |            |            |            |
|                              |                                                                                                                                                                                                                                                                                                |               |               | DCL                | 1.25 x initial limit         |           |            |            |            |            |
|                              |                                                                                                                                                                                                                                                                                                |               |               | ΔC/C               | within ±10% of initial value |           |            |            |            |            |
|                              |                                                                                                                                                                                                                                                                                                |               |               | DF                 | initial limit                |           |            |            |            |            |
|                              |                                                                                                                                                                                                                                                                                                |               |               | ESR                | 1.25 x initial limit         |           |            |            |            |            |
| <b>Storage Life</b>          | 175°C, 0V, 2000h                                                                                                                                                                                                                                                                               |               |               | Visual examination | no visible damage            |           |            |            |            |            |
|                              |                                                                                                                                                                                                                                                                                                |               |               | DCL                | 1.25 x initial limit         |           |            |            |            |            |
|                              |                                                                                                                                                                                                                                                                                                |               |               | ΔC/C               | within ±10% of initial value |           |            |            |            |            |
|                              |                                                                                                                                                                                                                                                                                                |               |               | DF                 | initial limit                |           |            |            |            |            |
|                              |                                                                                                                                                                                                                                                                                                |               |               | ESR                | 1.25 x initial limit         |           |            |            |            |            |
| <b>Biased Humidity</b>       | Determine after leaving for 1000 hours at 85±2°C, 85% relative humidity and rated voltage and then recovery 1-2 hours at room temperature.                                                                                                                                                     |               |               | Visual examination | no visible damage            |           |            |            |            |            |
|                              |                                                                                                                                                                                                                                                                                                |               |               | DCL                | 2 x initial limit            |           |            |            |            |            |
|                              |                                                                                                                                                                                                                                                                                                |               |               | ΔC/C               | within ±10% of initial value |           |            |            |            |            |
|                              |                                                                                                                                                                                                                                                                                                |               |               | DF                 | 1.2 x initial limit          |           |            |            |            |            |
|                              |                                                                                                                                                                                                                                                                                                |               |               | ESR                | 1.25 x initial limit         |           |            |            |            |            |
| <b>Temperature Stability</b> | Step                                                                                                                                                                                                                                                                                           | Temperature°C | Duration(min) |                    | +20°C                        | -55°C     | +20°C      | +125°C     | +175°C     | +20°C      |
|                              | 1                                                                                                                                                                                                                                                                                              | +20±2         | 15            | DCL                | IL*                          | n/a       | IL*        | 10 x IL*   | 12.5 x IL* | IL*        |
|                              | 2                                                                                                                                                                                                                                                                                              | -55+0/-3      | 15            |                    |                              |           |            |            |            |            |
|                              | 3                                                                                                                                                                                                                                                                                              | +20±2         | 15            | ΔC/C               | n/a                          | +0/-10%   | ±5%        | +10/-0%    | +18/-0%    | ±5%        |
|                              | 4                                                                                                                                                                                                                                                                                              | +85+3/-0      | 15            | DF                 | IL*                          | 1.5 x IL* | IL*        | 1.5 x IL*  | 2 x IL*    | IL*        |
|                              | 5                                                                                                                                                                                                                                                                                              | +175+3/-0     | 15            |                    |                              |           |            |            |            |            |
|                              | 6                                                                                                                                                                                                                                                                                              | +20±2         | 15            | ESR                | 1.25 x IL*                   | 2.5 x IL* | 1.25 x IL* | 1.25 x IL* | 1.25 x IL* | 1.25 x IL* |
| <b>Surge Voltage</b>         | Test temperature: 175°C±3/0°C<br>Test voltage: 1.3 x category voltage at 175°C<br>Series protection resistance 1000±100Ω<br>Discharge resistance: 1000Ω<br>Number of cycles: 1000x<br>Cycle duration: 6 min; 30 sec charge, 5 min 30 sec discharge                                             |               |               | Visual examination | no visible damage            |           |            |            |            |            |
|                              |                                                                                                                                                                                                                                                                                                |               |               | DCL                | initial limit                |           |            |            |            |            |
|                              |                                                                                                                                                                                                                                                                                                |               |               | ΔC/C               | within ±5% of initial value  |           |            |            |            |            |
|                              |                                                                                                                                                                                                                                                                                                |               |               | DF                 | initial limit                |           |            |            |            |            |
|                              |                                                                                                                                                                                                                                                                                                |               |               | ESR                | 1.25 x initial limit         |           |            |            |            |            |

\*Initial Limit